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Phil Bumbalough in his Metamora, Illinois, shop. See p.4

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barnstorming

From the outside, Phil Bumbalough's pole-barn shop stands large and proud. But the many smaller things on the inside make it run like clockwork.

For several years, Phil Bumbalough worked in a two-car garage. It was efficient, but he felt squeezed into the small space. When he moved, he wanted just the opposite at his new home in Metamora, Ill.—a larger space where his layout could grow.

He designed his new shop from the ground up, starting with a pole-barn structure measuring 28×64' to give himself just what he wanted. Amenities include radiant heating and extensive dust-collection ductwork embedded in the concrete floor. Two roll-up doors let in lots of natural light in good weather

and make it easy to move lumber in and furniture out. A separate enclosed utility room stores lumber and houses his dust cyclone and air compressor (and a tractor), and also has its own roll-up door.

And, of course, it is big. "To me a shop is really all about space," Phil says. "If you don't have the space to work on things, it's not going to be enjoyable."

That may be true, and although many a woodworker might envy the roominess of Phil's shop, what really makes the space so efficient are the little things he's planned into





With 1,344 sq ft in the main shop area, Phil has plenty of space to maneuver. Ample storage throughout not only gives the work area an even more spacious feel, but ensures that clutter is never a problem.

1



ABOVE: Phil's shop has three full-size roll-up doors; the two on the right side open onto the main shop while the lefthand door encloses a shop utility room.

it. Just a handful of the ideas Phil came up with can make even the smallest shop more productive, nicer looking and maybe even feel a bit bigger.

A little R&R

To begin with, Phil "makes" lumber for shop cabinets by a process he calls rip and rotate. He starts by planing 2×10 or 2×12 yellow-pine dimensional stock smooth and square, then rips it into strips slightly thicker than his desired workpieces. He rotates each strip 90° and

SHOP SPECS

TYPE: Dedicated building.

SIZE: Main shop: 28×48' (1,344 sq ft); extension: 16×28' (448 sq. ft.); with 11' ceiling throughout.

CONSTRUCTION: Pole barn; metal exterior, painted OSB interior walls.

HEATING & COOLING: Radiant heat embedded in concrete floor; overhead fans for cooling.

ELECTRICAL: 200-amp service with numerous 110- and 220-volt outlets.

LIGHTING: Compact fluorescent fixtures.

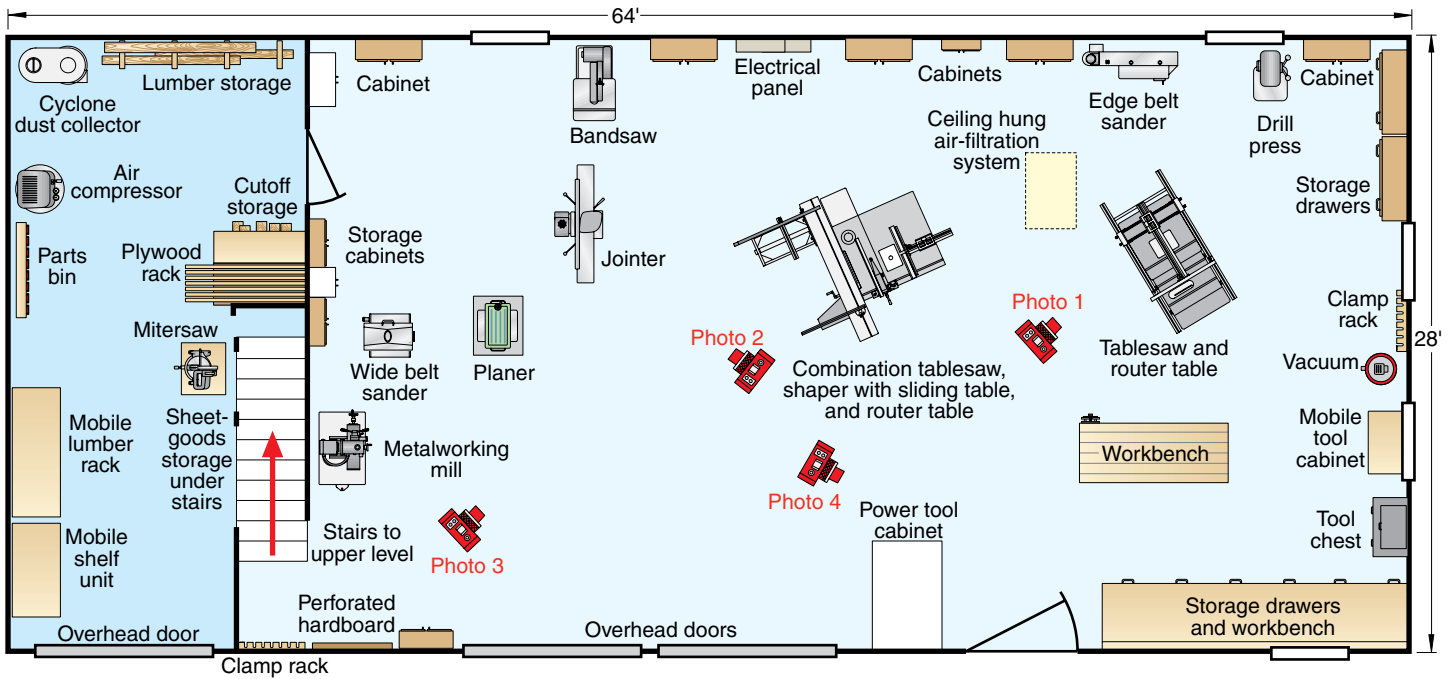
DUST COLLECTION: 2-hp Woodsucker cyclone connected to ductwork embedded in floor.

AIR COMPRESSOR: 5-hp, 60-gal Puma; dedicated air lines throughout shop with numerous connectors.



Every object mounted on the shop walls, from small jigs to large cabinets, is supported by an extensive system of beveled cleats. This allows Phil unlimited flexibility for rearranging the cabinets and components.

2



Phil divided his pole-barn shop into two distinct areas, creating an enclosed utility room (left) separated from the main shop. Noisemakers such as his dust-collection cyclone and air compressor reside there, along with wood storage. There is an 800-sq.-ft. room upstairs currently used for storage; Phil plans to build an office in the space.

arranges them for appearance before glue-up to create stable pine boards or panels (see photo, next page) with a rift-sawn or quartersawn look at a fraction of the cost you might expect. "It takes more time than just going out and picking up lumber, but you get beautiful boards for only about \$1 a foot," he says.

Flexibility and mobility

All major machines in Phil's shop are on wheels. This lets him move tools out of the way if he wants to bring his truck inside to work on it. He also likes to tweak his layout occasionally, which is easier with the added mobility.

Shop walls are changeable in their own way. Phil put 45° beveled cleats on each wall; every object on the walls hangs from them. Anything on the wall, from the





4

ABOVE: The main entrance to the shop opens directly into the corner workbench area which enjoys an abundance of natural and overhead light.

LEFT: Even large shops can run out of wall space for hanging clamps and other tools, so Phil built storage holders to accommodate them. "This unit basically gives me another 8' of wall space."



largest cabinet to the smallest jig, can be moved anywhere even in the shop. There are even cleats mounted 8' high. "That's to accommodate stuff I haven't thought of yet," he says. For more about how to build this cleat system, visit woodmagazine.com/cleatsystem

Best of the rest

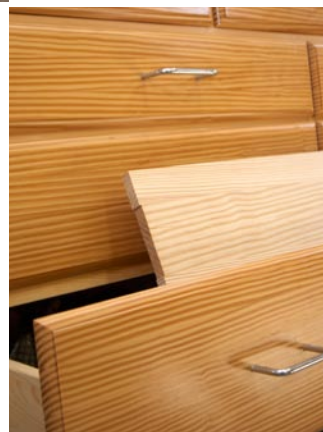
The many things Phil designs to make his shop work so well include these highlights:

•**Light zones.** Phil uses a mix of compact fluorescent bulbs equivalent to 42- and 105-watts, and groups them so the brighter bulbs are over the most-used areas.

•**Over-saw holder.** A T-bar rack hanging over his table-saw holds ear and eye protection, pushstick, tape measure, clipboard, and pencil cup.

•**Drawers everywhere.** Phil believes in storage, and added drawer boxes in every empty space beneath benches and power tools.

And of course, Phil has built lots of useful shop projects and jigs, several of which are featured on the next five pages. They're not all large, in fact, most are quite small, but each will make a big impact on any size shop.



Phil uses a technique he calls "rip and rotate" to create attractive boards and panels out of ordinary 2x10 lumber. He cuts the lumber into strips and arranges them for the best-looking grain, rotating strips 90° as needed to get the best edge grain, then glues them up at whatever width he needs. The riftsawn or quartersawn effect gives a uniform appearance to all the doors and drawer fronts throughout his shop.

projects and ideas

Mobile Bases

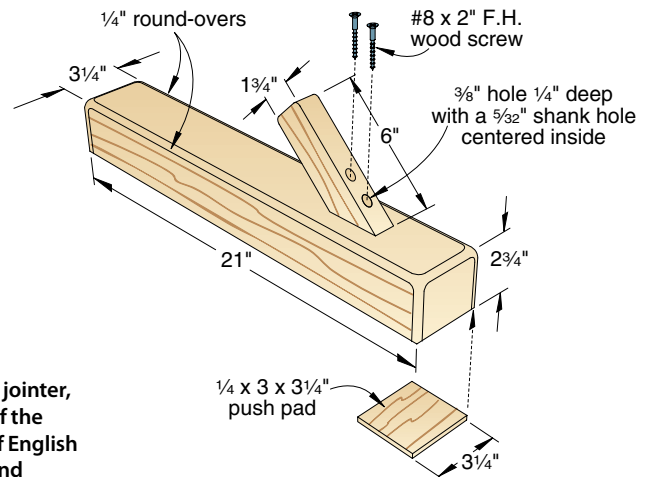


Even though he has plenty of space, Phil keeps all of his major machines mobile. "If I want to pull my truck in and work on it, I can move things out of the way," he explains. "Plus, I can play around with the shop configuration a little bit." His mobile bases are made of 1¼" pine milled from standard 2×10 lumber and use casters sized to the tool. Note how he uses only two nonswiveling casters (*above*). When lifted with the wheeled handle the unit is fully mobile, but is perfectly stable when lowered to the floor to rest on the solid wood support opposite the casters.



Phil uses wheeled handles that attach to mating brackets on his mobile bases, a method he finds works best for heavy machinery. "They're more maneuverable because you're moving the mass from a different point," he says. "Instead of pushing the tool from the top, with this you get a lower center of gravity." Phil and his dad welded up the handle out of flat iron stock and black pipe, adding the 4" caster. When not needed, it hangs on a cleat bracket (*right*).

Jointer Pushblock



Pushblocks always add a measure of safety when feeding stock through a jointer, but Phil designed this massive pushblock to also give him better control of the workpiece. "If you push down hard on the top of the board you put a lot of English on it," he says. "I found that pushing from the end gives a more accurate and reliable cut." The pushstick is made from shop scrap. The thin push pad at the rear should be attached with glue only, not screws.

Rolling Parts Cabinet



Constructed of $\frac{3}{4}$ " melamine-coated particleboard and edged in pine, this rolling parts cabinet holds plastic parts bins in various sizes on wire shelving. The wire shelving weighs less than plywood or other solid material, and the built-in wire ledge at the back of the shelves catches the rear of each bin to keep it from sliding out until needed.

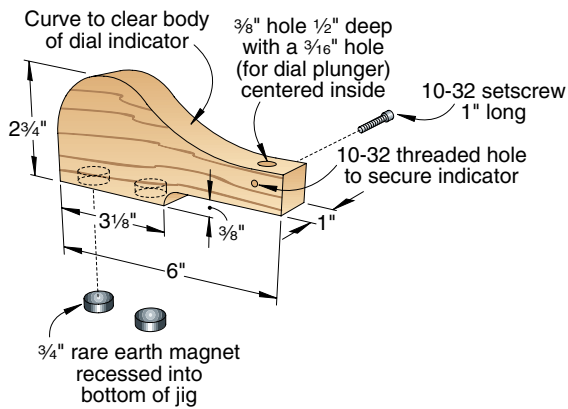
Sandpaper Storage Rack



Phil used $\frac{1}{2}$ " plywood with simple butt joinery and screws to make this sandpaper rack. The $\frac{1}{4}$ " hardboard shelves slide into dadoes cut $\frac{1}{4}$ " apart into the inner surfaces so he can rearrange the spacing as needed. The larger space at the bottom holds stacks of abrasive pads and wooden sanding blocks. The unit stands 2' tall, and has an 11x12" footprint.

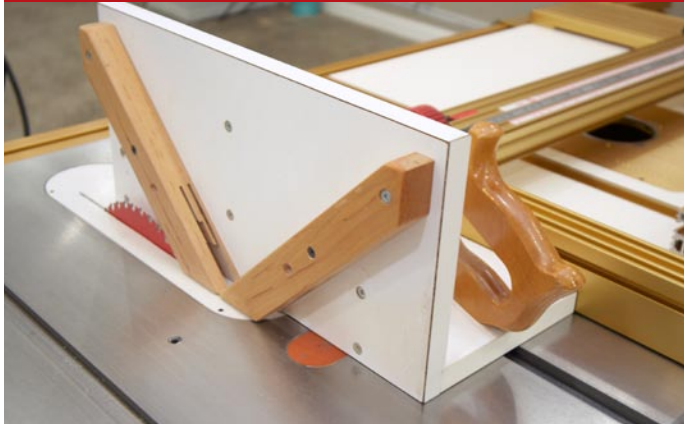
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Jointer Dial-Indicator Holder

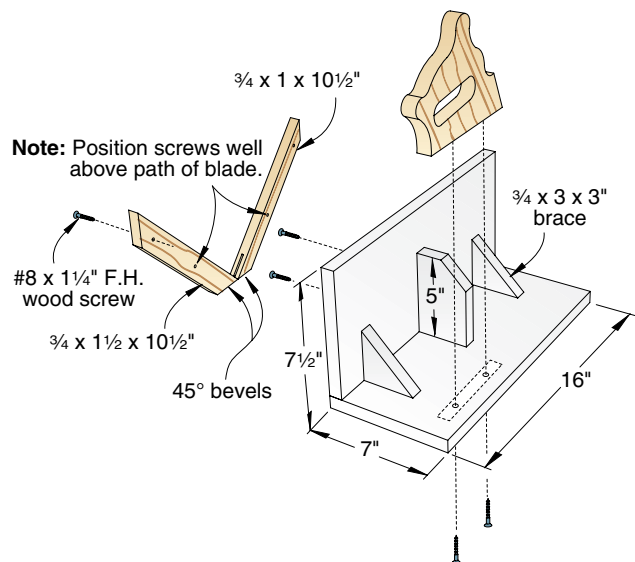


Phil tried several methods of setting jointer blades, but finds a dial indicator the most reliable. Once he'd made the cutout in a piece of scrap ash to accommodate the gauge, he was struck by a moment of whimsy when he noticed the shape. "I thought, 'Hey, it looks like a whale.' So just for fun I put the little face on it."

Spline-Cutting Jig



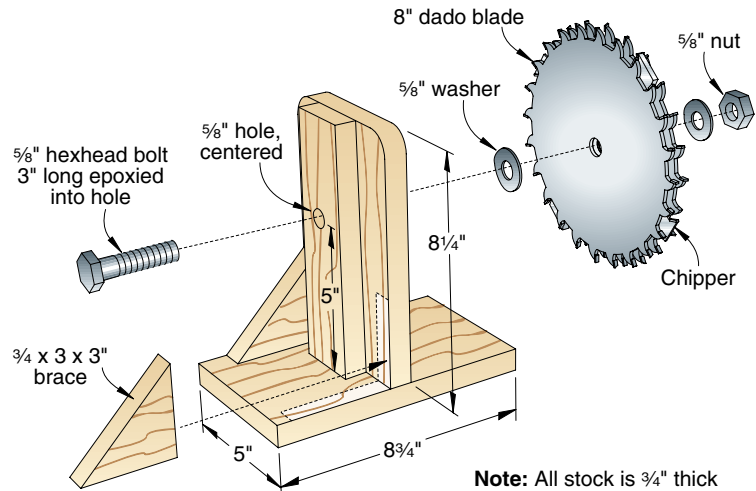
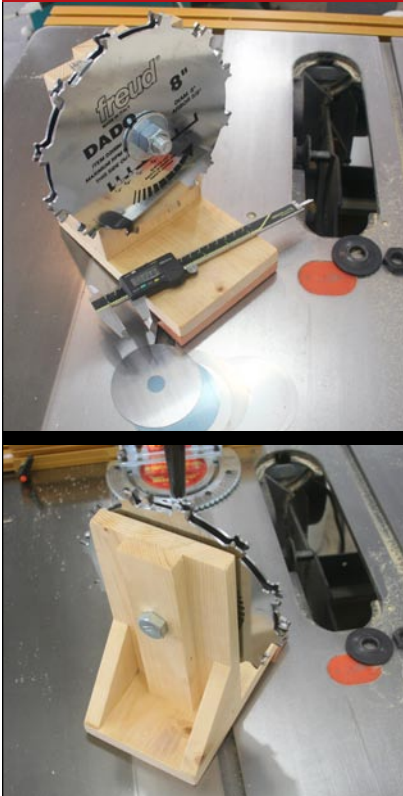
For making picture frames, Phil uses this spline-cutting jig to create slots in the frame corners to accept the splines. The maple main supports are set at 45° angles to the table surface and mounted on 3/4" melamine-coated particleboard. A replacement saw handle he bought completes the jig. Although Phil almost always uses the tablesaw for cutting splines, the jig would be just as handy on a router table.



Shop Tip:

"You can store a lot more in drawers than you can behind doors. If possible, convert any wasted space under or around your machines into drawer cabinets. You will increase the available storage space dramatically."

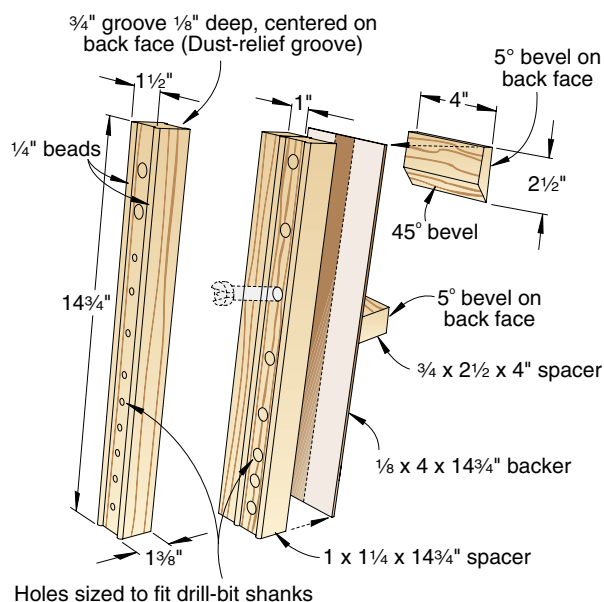
Dado Stack Holder



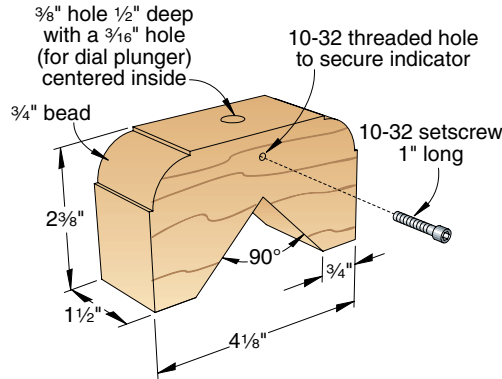
Because the cramped quarters of a tablesaw throat made it difficult to set up a dado stack right on the arbor, Phil came up with this solution to move the procedure up to the tabletop. With the blades and chippers mounted on this holder, the trial-and-error process of adjusting and measuring the stack size with shims is much easier. Once set to his satisfaction, Phil transfers the stack to the saw arbor.

Forstner Bit Rack

Phil ripped a 2x4 into strips to create this Forstner bit holder as part of an extensive cleat-based hanging system. Each strip features a dust-relief groove on the back side that allows any chips or debris that may land in a nonoccupied hole to fall out the bottom. The spacer block attached to the back side of the assembly angles the holder slightly in relation to the wall, keeping the bits in place.



V-Block Dial-Indicator Holder



Similar in concept to the dial-indicator holder he made for his jointer, Phil designed this variation for the planer. The V-shaped holder straddles the knives while contacting the curved surface of the cutterhead, so he can set the knives accurately relative to the head.

woodworker's profile

Phil Bumbalough has been working with wood almost as long as he has with electronics and computers. Phil trained in avionics and electronics when working on jets while in the Marine Corps (Marine memorabilia and several photos of jets decorate his shop), and now tests software by profession, so it's not surprising that his digital life often overlaps his woodworking life.

When not in his shop, Phil is usually at his computer updating or writing articles for his woodworking Web site (benchmark.20m.com). The extensive site features shop tours of both his current and previous shops, plans for jigs and projects, and dozens of his tool reviews and woodworking articles on a variety of topics. Some of the articles, such as "Woodworking in the Digital Domain" and "The Microsoft-compatible Tablesaw," serve as good examples of his technical background.

Phil was exposed to woodworking in high school shop class, but feels he got any natural abilities he has from his dad. "The first project I remember doing was an exact replica of a battleship made from cutoffs of whatever project he was working on," he recalls. "I was probably about six years old, so you can imagine just how 'exact' that replica was."



Phil has made a number of pieces of large furniture for both home and shop, like the workbench, storage cabinets, and the massive hutch shown above. Here Phil measures the hutch doors in preparation for mounting glass inserts.

On the smaller side, Phil also enjoys clockmaking. Made of oak (left) and figured maple veneer (right), these two clocks feature double-strike "bim-bam" movements.

Photographer: **Phil Bumbalough**; Jeff McSweeney Creative Services
Illustrations: **Roxanne LeMoine**